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Pancyclicity in 4-connected planar graphs

A graph on n vertices is said to be pancyclic if, for each $k \in \{3, \dots, n\}$, it contains a cycle of length k . Following Bondy's meta-conjecture that almost any nontrivial condition on a graph which implies Hamiltonicity also implies pancyclicity, Malkevitch conjectured that a 4-connected planar graph is pancyclic if it contains a cycle of length 4. We show that, for any edge e in a 4-connected planar graph G , there exist at least $\lambda(n - 2)$ cycles of pairwise distinct lengths containing e , where $\lambda = 5/12$. We also show that λ can be $2/3$ at best. Joint work with Bojan Mohar.